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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO. ¹
09/807,256	07/16/2001	Elke Scholl	H 3463 PCT/US	4227

423 7590 09/07/2004

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EXAMINER

LAVIN, CHRISTOPHER L

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,256

Applicant(s)

SCHOLL ET AL.

Examiner

Christopher L Lavin

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05/14/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29 is/are allowed.
- 6) ☐ Claim(s) 20-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 20 - 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 1 recites in part (d) the open statement "at least one of". It is unclear what the list of options is for this qualifier.
4. The examiner has interpreted this statement to mean that either a "recording of average brightness values machine readably on a data storage medium" or "output as a diagram..." are the two options in this claim.
5. Claims 21 - 39 are indefinite for depending from an indefinite antecedent claim.
6. Claims 22 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Claims 22 and 39 recite the limitations "trapezoidal" and "image portions". There is insufficient antecedent basis for these limitations in the claim.
8. The examiner has interpreted "image portions" to refer to the overall image of the area to be analyzed.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Revankar (5,767,978).

11. In regards to claim 20, Revankar in the paragraph starting at column 6, line 18 discloses a process for electronically producing a two-dimensional image comprising of pixels. Part of the information contained in a pixel is brightness or intensity. In the sentence starting at column 13, line 39 Revankar discloses dividing an image into pixel blocks of 6 x 6 pixels, thus the blocks comprise of at least 4 pixels. Pixels are contained in rows, and thus the pixel blocks that Revankar discloses will also be arranged in rows. Revankar discloses in the sentence starting at column 13, line 18 that an average brightness or intensity is found for an image element by averaging the brightness values of the pixels contained within that image element. Further in that sentence Revankar discloses that the difference between the average brightness of adjacent image elements is found. In the sentence starting at column 13, line 4 Revankar discloses that statistics are kept on the results of the difference calculations for each row. Finally, Revnakar in the paragraph starting at column 8, line 48 discloses that the information

obtained from the edge detection as described above is used to output an improved image. This image displays the spatial correlation between the difference values.

12. In regards to claim 22, Revankar in the sentence starting at column 5, line 34 discloses that one embodiment of the invention can be used with a printing/copying machine. The standard paper size for such a device is 8 ½ inches by 11 inches. 8 ½ inches is approximately equal to 21.59 cm, which is between 1mm and 5m.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 21 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Revankar in view of Son (6,005,683).

17. In regards to claim 21, Revankar as shown above in the rejection of claim 20 discloses a process for analyzing brightness variations in image elements having everything in common with claim 21 except for illumination correction.

18. Son teaches in the paragraph starting at column 4, line 16 that illumination correction should be performed before acquiring the image to be processed. Son collects several different correction parameters, including photo response nonuniformity (PRNU). An obvious approach to correcting PRNU would be to add or subtract a correction coefficient to pixel elements of an image to make up for the varying illumination readings of the input device. This would allow for a more accurate electronic image for processing.

19. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use illumination correction (as taught by Son) to pre-process the image for the edge detection method described in Revankar. As Revankar's edge detection process relies on an accurate illumination reading obtaining the most accurate reading by use of illumination correction allows for a better edge detection process.

20. In regards to claim 39, Revankar in the sentence starting at column 5, line 34 discloses that one embodiment of the invention can be used with a printing/copying

machine. The standard paper size for such a device is 8 ½ inches by 11 inches. 8 ½ inches is approximately equal to 21.59 cm, which is between 1mm and 5m.

21. Claims 23, 31, 33 - 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Revankar in view of Ito (4,628,465).

22. In regards to claim 23, Revankar as shown above in the rejection of claim 20 discloses a process for analyzing brightness variations in image elements having everything in common with claim 23 except for varying the row angle of the image elements.

23. Ito teaches in the paragraph starting at column 3, line 28 that polar coordinates may be used to create rows of image elements. The angle of the rows may vary, but can certainly fall within 60 to 120 degrees.

24. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use varying row angles (as taught by Ito) for the edge detection process described in Revankar. Varying the row angles is particularly useful when analyzing a shape that is not rectangular in this example a spray cloud, which is triangular. Using varying row angles would allow for better detection of edges.

25. In regards to claim 31, Revankar as shown above in the rejection of claim 20 discloses a process for analyzing brightness variations in image elements having everything in common with claim 30 except for being specifically designed to monitor spray jets.

26. Ito teaches in the paragraph starting at column 2, line 39 that a spray jet can be analyzed with an imaging device. In order to analyze the spray plume, the imaging device must be placed perpendicular to the spray axis.

27. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Revankar's edge detection process for use with a nozzle monitoring process (as taught by Ito). Analyzing a spray jet with edge detection is an obvious way to detect the spray cone and varying concentrations of particles within the jet. Monitoring a spray jet allows for a more even distribution of particles onto a surface, saving time and money.

28. In regards to claim 33, Ito in the lines 61 - 64 starting at column 2 discloses that the nozzle can be adapted for a liquid, gas, or solid.

29. In regards to claim 34, Ito in the lines 61 - 64 starting at column 2 discloses that the nozzle can be adapted for a coating spray.

30. In regards to claim 35, Ito in the lines 61 - 64 starting at column 2 discloses that the nozzle can be adapted for a solid particle coating spray.

31. In regards to claim 36, Ito in the paragraph starting at column 3, line 67 that a luminance distribution is found. The only reason for obtaining such information is to use that information is to detect problems. Detecting the problem is useless without taking some action in response to the problem. For example, the action could be a warning alerting the user of the problem.

32. In regards to claim 37, Ito in the sentence starting at column 4, line 6 discloses that the angle of divergence of the jet is monitored.

33. In regards to claim 38, Ito in the sentence starting at column 4, line 23 discloses that a check is performed to find out if the angle of divergence is unsatisfactory. The only reason to do this is so the system can take some action to deal with the unsatisfactory performance. For example, the action could be a warning alerting the user of the problem.

34. Claims 24 – 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Revankar in view of Imanishi (5,726,705).

35. In regards to claim 24, Revankar as shown above in the rejection of claim 20 discloses a process for analyzing brightness variations in image elements having everything in common with claim 24 except for being specifically designed to monitor metal or plastic surfaces.

36. Imanishi in the paragraph starting at column 1, line 23 discloses a surface defect inspection process intended for automobiles. Automobile bodies are primarily made out of metal and plastic, Imanishi notes this metallic makeup in the sentence starting at column 3, line 62.

37. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Revankar's edge detection process for use with a metal surface defect monitoring process (as taught by Imanishi). Analyzing a surface with edge detection is a common practice for finding defects. Detecting defects on an automobile surface while the vehicle is still on the assembly line can save a great deal of money both with correcting the problem on the particular vehicle and detecting errors that could be perpetuated on numerous vehicles on the same assembly line.

38. In regards to claim 25, Revankar in view of Imanishi as shown above in the rejection of claim 35 discloses a process for detecting surface defects in plastic or metal, however it does not explicitly state that it can be used for determining the thoroughness of a cleaning. Official notice is taken that the surface of an automobile needs to be prepared first through cleaning before paint can be applied. It would be obvious to use the defect detection system specified in claim 24 for use with verifying that a thorough cleaning job had been performed before painting the vehicle. Verifying a surface is clean can prevent costly repaints due to a poor prep stage.

39. In regards to claim 26, Imanishi in the sentence starting at column 5, line 39 discloses that defect detection process if used on painted surfaces. Paint is a chemical coating.

40. In regards to claim 27, Imanishi in the sentence starting at column 5, line 39 discloses that defect detection process if used on painted surfaces. Painting a surface of an automobile can be accomplished through chromating the surface.

41. In regards to claim 30, Imanishi in the paragraph starting at column 8, line 42 discloses a system for warning when a defect is detected, which is done through edge detection, which uses the difference of brightness in image elements.

42. Claim 298 is rejected under 35 U.S.C. 103(a) as being unpatentable over Revankar in view of Imanishi as applied to claim 25 above, and further in view of Engle (5,760,126).

43. In regards to claim 28, Revankar in view of Imanishi as shown above in the rejection of claim 26 discloses a surface defect detection process having everything in

common with claim 28, except it was not specifically stated for use with a crosslinkable organic substance.

44. Engle teaches in the paragraph starting at column 9, line 30 that crosslinkable organic substances can be used for automotive coatings.

45. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the surface defect monitoring process (of claim 256) to analyze surfaces coated with crosslinkable organic substances. As the defect monitoring process is designed for an automobile assembly line and crosslinkable organic substances are used to coat automobiles it would be advantageous to use the defect monitoring system to detect defects in the crosslinkable organic coating to prevent costly mistakes in the production process.

46. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Revankar in view of Ito as applied to claim 31 above, and further in view of Pierce (5,701,156).

47. In regards to claim 32, Revankar in view of Ito as shown above in the rejection of claim 31 discloses a nozzle spray monitoring process having everything in common with claim 32, except it was not specifically specify taking images from multiple angles of the spray jet.

48. Pierce teaches in the paragraph starting at column 2, line 61 that a second imaging device can be used to take a second image of the spray jet from a different angle than the first image was taken from.

49. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the nozzle spray monitoring process (of claim 31) to include a second viewing angle of the spray jet. This would allow for a more comprehensive view of the spray jet, allowing for better detection of errors and thus saving time and money.

Allowable Subject Matter

50. Claim 29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

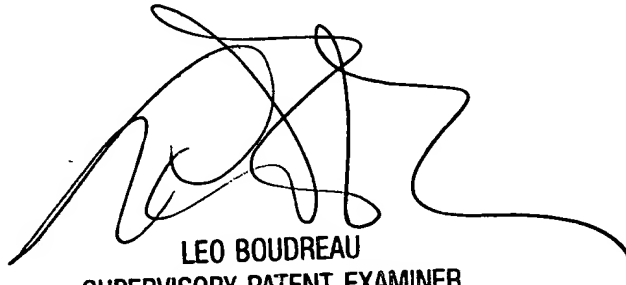
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher L Lavin whose telephone number is 703-306-4220. The examiner can normally be reached on M - F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703)305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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